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2007

IBM® 6221 and IBM 6224 WORKSTATIONS

Hardware Setup Guide

Autodesk®

Autodesk® Inferno® 2007, Autodesk® Fire® 2007, Autodesk® Flame® 2007, Autodesk® Flint® 2007, Autodesk® Smoke® 2007, Autodesk® Backdraft® Conform 2007

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1 Introduction

Summary

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About This Guide

This guide describes how to set up the IBM® ZPro 6221 and IBM APro 6224 workstations for your Autodesk® Effects or Editing 2007 application.

To install and configure the hardware and software components of your Effects or Editing products, use this guide in conjunction with the *Software Installation Guide for Linux Workstations*, the *Configuration File Reference Guide for Linux Workstations*, the *Stone Direct Configuration Guide*, and the *Stone and Wire Filesystem and Networking Guide*.

NOTE: In most cases, both hardware setup and application installation is done on delivery by an authorized technician, so you may not need to perform some of the procedures in these guides.

The latest versions of all guides are available in PDF format from the Web at *www.autodesk.com/discreet-documentation*. Use XPDF or Adobe® Acrobat® Reader™ to view and print these files.

Related Documentation

The following tables list the documentation associated with the current release. For details on each of these documents, as well as for help obtaining them, refer to your application's release notes.

User and Reference Guides	Description
User's Guide	Detailed instructions on using the software.
What's New	A complete list of the new features for this release.
Online Help	All of the information in the User's Guide along with powerful search functionality
Hot Keys Reference Guide	A complete list of hot keys for commonly used functions
Hot Keys Card	A list of the most frequently used hot keys
Release Notes	A complete list of documentation and information on late-breaking features
Fixed and Known Bug List	A complete list of fixed and known bugs for this release

Installation and Configuration Guides	Description
Hardware Setup Guide (for your workstation)	Information on how to set up your workstation's video I/O components and other peripherals
Installation and Configuration Guide (for your operating system)	Information on how to install and configure the Linux® or IRIX® operating system on your workstation should you require to do so
*Stone and Wire Filesystem and Networking Guide (*for this release)	Procedures for configuring your Autodesk Stone® filesystem, Wire® networking, and Wiretap™ services.
*Stone Direct Configuration Guide (*for this release)	Detailed connectivity diagrams and configuration procedures for your Stone storage arrays
Software Installation Guide (for Linux® or IRIX® workstations)	Information about installing and licensing your Autodesk Editing or Effects software and installing and configuring Autodesk Cleaner® XL
Configuration File Reference Guide (for Linux or IRIX workstations)	Information on how to modify the initialization and project configuration files associated with your Autodesk application

Other Product Reference Guides	Description
Autodesk Cleaner XL User's Guide	Information on how to use Cleaner XL.
Autodesk Cleaner XL Troubleshooting Guide	Troubleshooting information for Cleaner XL.
Using QuickTime with Linux Workstations	Information on how to use Cleaner XL to convert QuickTime® files for use on Linux workstations

Other Product Reference Guides	Description
Autodesk Burn Installation and User's Guide	Information on how to install, set up, and use Autodesk Burn™
Autodesk Backburner Installation and User's Guide	Information on how to install, set up, and use Autodesk Backburner™
Autodesk Wiretap Web Installation and User's Guide	Information on how to install, set up, and use Autodesk Wiretap™ Web

Consult the Autodesk Web site at *www.autodesk.com/discreet-documentation* for the latest version of all documents.

Workflow for Hardware Setup and Application Installation

The following procedure provides the general workflow for installing an Effects or Editing product on an IBM 6221 or IBM 6224 workstation.

To install an Effects or Editing application on an IBM 6221 or IBM 6224 workstation:

1. Review the guidelines for working with hardware components. See "Hardware Configuration Guidelines" on page 3.
2. Connect all peripherals (mouse, keyboard, Wacom® tablet, graphics monitor) to the proper ports, and connect your workstation to the Autodesk® Wire network. See "Peripherals Connection Diagrams" on page 7.
3. Connect your workstation to Autodesk Stone Direct storage. See "Connecting Storage" on page 10.
4. Connect a VTR and a broadcast monitor to your workstation. See "IBM 6224 Video Wiring" on page 17 or "IBM 6221 Video Wiring" on page 15.
5. Set up the audio hardware. See Chapter 4, "Setting Up Audio Hardware," on page 27.
6. Perform the procedures in the *Software Installation Guide* for Linux workstations to install and license your Effects or Editing application, and to install Cleaner XL (if required).

Hardware Configuration Guidelines

In most cases, hardware integration and application installation is done on delivery by an authorized technician, and some of the procedures in this guide may not be necessary. Still, it is a good idea to read through all chapters to familiarize yourself with the configuration procedures for the following reasons:

- Many suspected problems with your system may be due to loosened connections or improperly configured devices. This guide helps you troubleshoot problems by providing information about properly configured systems.
- If you need to call Customer Support, familiarity with this guide puts you in a better position to provide diagnostic information.
- If you want to move your system at any time, or upgrade certain hardware components, information in this guide is crucial.

Although this guide, in conjunction with the *Autodesk Stone Direct 2007 Configuration Guide*, provides complete information regarding configuring hardware components, hardware configuration should only be performed by an experienced hardware integrator familiar with the Linux operating system, IBM APro and ZPro workstations, and peripherals associated with professional high-performance video and post production of film.

Your Autodesk system consists of high-performance hardware that must be configured in an environment suited to its operational needs. Other considerations include minimizing the risk of damage due to static discharge and ensuring all components are properly grounded.

Memory Requirements

The amount of memory required for your Effects or Editing system depends on the resolution of your projects, the type of work you perform and, in some cases, the platform on which you are running the application. Refer to the *Software Installation Guide* for your operating system to determine the memory requirements for your Effects or Editing application.

Ensuring Proper Environmental Conditions

You should consider the following environmental guidelines for all hardware configuration:

- Make sure the rack in which hardware components are installed is open or ventilated. Follow the ventilation specifications that apply to your system.
- Place all components in an air-conditioned environment. All hardware components generate heat and must be kept cool. Follow the air-conditioning specifications that apply to your system.
- Keep all hardware components in a clean, dust-free location.
- Minimize vibration and humidity.
- Do not block the vents on the component housing.
- Do not drape anything, such as a jacket or a blanket, over hardware components.
- Minimize electromagnetic noise by separating digital data and power cables from analog audio cables and running them in different cable ducts.

Avoiding Damage from Static Electricity

When installing any hardware equipment, take the following precautions to prevent damage to sensitive components from static discharge:

- Make sure power is turned off on the component you are working on. It is a good idea to unplug components until all other connections are configured.
- Always wear a grounded static wrist strap. Attach the strap's alligator clip to any grounded metal surface on the component's chassis that you are working on. Place the wristband around your wrist.
- Do not handle any components unnecessarily, particularly boards and cards that slide in and out of slots on their parent hardware components.

Grounding Audio Hardware Components

It is important to properly ground your audio components. Otherwise, you may have ground loops, or humming in the system. To ensure audio components are properly grounded, use the XLR-3 cables shipped with your system. Using any other cables may cause humming in the system.

Receiving Your Shipment

When you receive your shipment, check all the boxes for dents or other markings that may indicate damage during transport. If you suspect a component is damaged, carefully inspect it before setting up the system. If you receive a damaged component, call Customer Support.

Notation Conventions

A number of style conventions are used throughout this guide. These conventions and examples of their use are shown as follows.

Convention	Example
Text that you enter in a command line or shell appears in Courier bold. You must press the **ENTER** key after each command.	**`rpm -qa`**
Variable names appear in Courier, enclosed in angle brackets. No spaces are allowed in variable names.	`<variable_name>`
Variables that appear enclosed in square brackets are optional.	`[<filename>]`
Feedback from the command line or shell appears in Courier.	`limit coredumpsize`
Directory names, filenames, URLs, and command line utilities appear in italics.	*/usr/discreet*

Contacting Customer Support

You can contact Autodesk Media and Entertainment Customer Support at *www.autodesk.com/support* or in one of the following ways.

Location:	Contact Information:
Within the Americas:	Hotline (North America): 1-800-925-6442 Direct dial: 415-507-5256 (Country code = 1) 8 AM to 8 PM EST Monday to Friday, excluding holidays *me.support@autodesk.com*
Within Europe, Middle-East and Africa:	Hotline (from London, UK): +44-207-851-8080 9 AM to 5:30 PM (local time) Monday to Friday, excluding holidays *me.emea.support@autodesk.com*
Within Asia Pacific: (Excluding India, China, Australia, New Zealand and Japan)	Hotline (from Singapore): +65-6555-0399 9 AM to 6 PM (local time) Monday to Friday, excluding holidays *me.support.singapore@autodesk.com*
Within India:	Hotline (from Mumbai): +91-22-6695-2244 9:30 AM to 6:30 PM (local time) Monday to Friday, excluding holidays *me.support.india@autodesk.com*
Within Japan:	Hotline (from Tokyo): 0120-107-290 Direct dial: +81-3-6221-1810 10 AM to 6 PM (local time) Monday to Friday, excluding holidays *me-sys-support@autodesk.jp*
Within China:	Direct dial: +86-10-6505-6848 9 AM to 6 PM (local time) Monday to Friday, excluding holidays *me.support.china@autodesk.com*
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Customer support is also available through your Autodesk reseller. To find a reseller near you, consult the reseller look-up database on the Autodesk web site at *www.autodesk.com/resellers*.

2 Connecting Peripherals

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Peripherals Connection Diagrams

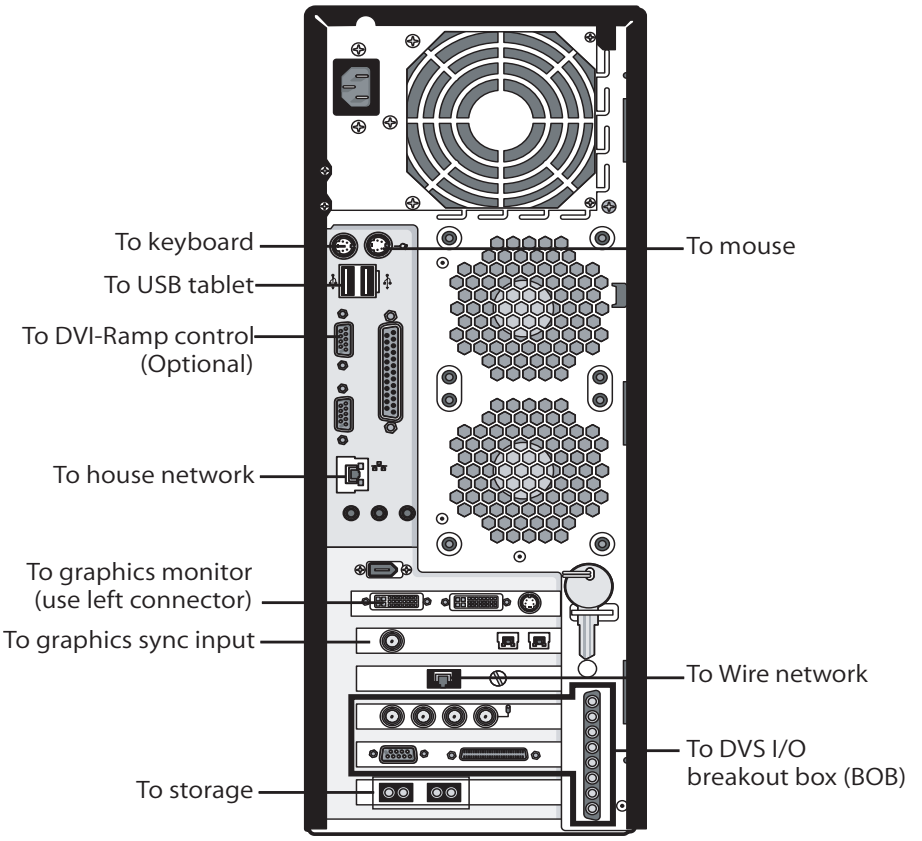
You must connect all hardware peripheral devices before you boot your workstation. The following diagrams identify the ports to which the peripherals connect on IBM 6221 and IBM 6224 workstations.

In both diagrams, a 2-port QLA 2342 fibre channel adapter is shown. Your workstation may be equipped with a 2-port QLA 2342 fibre channel adapter or a 4-port QLA 2344 fibre channel adapter. See "Connecting Storage to the QLA Fibre Channel Adapter" on page 11.

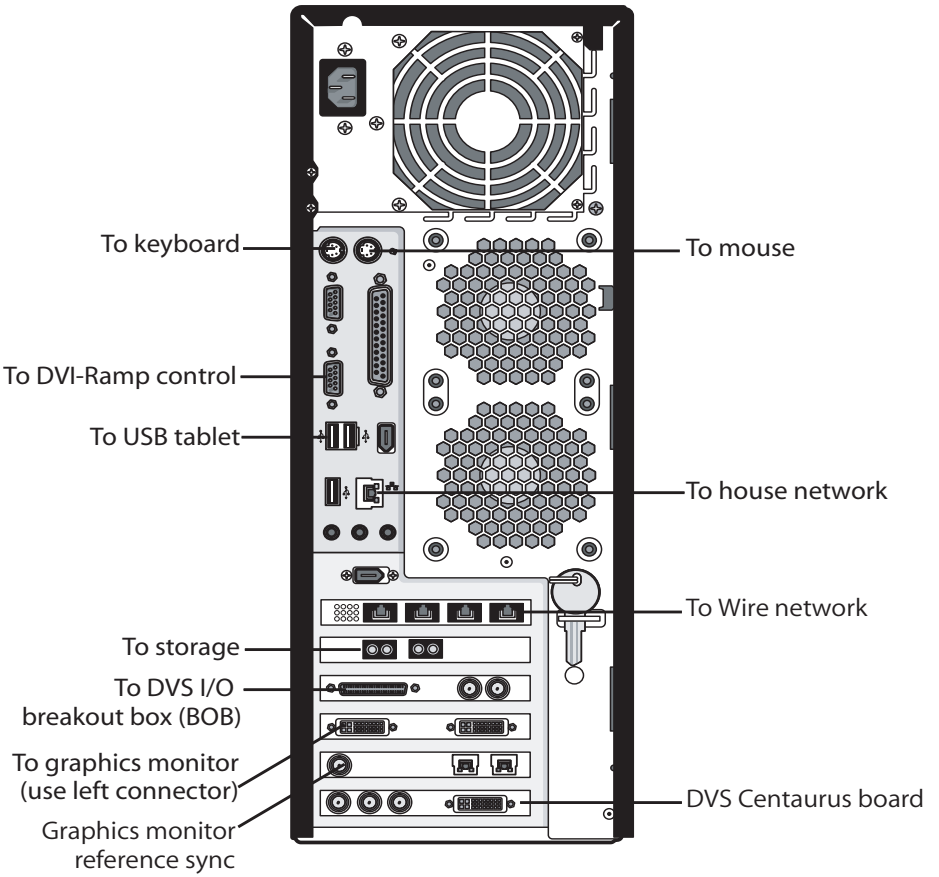
In the IBM APro diagram, a 2-port Gigabit Ethernet network card is shown.Your workstation may be equipped with a 1-, 2-, or 4-port Gigabit Ethernet network card. See "Connecting to Gigabit Ethernet (GigE) Networks" on page 10.

For detailed information associated with video and audio connections, see their respective chapters.

IBM ZPro 6221 Workstation



IBM APro 6224 Workstation



Connecting the Keyboard and Mouse

Connect the keyboard and mouse to the ports on the back of the Linux workstation marked for these devices. The Linux workstation uses standard PS/2-style mouse and keyboard input devices. If you are installing the system in a machine room environment, you can use any number of PS/2 mouse/keyboard extender products to increase the distance between the system and these input devices.

Connecting the Tablet

The Wacom® Intuos USB tablet is shipped with your system. Connect this tablet to the USB extender and the Linux workstation *before* booting the workstation and before installing the software. For connection information, refer to the appropriate diagram in "Peripherals Connection Diagrams" on page 7.

All customization with respect to the tablet, including setting tablet margins, should be done in the Preferences menu of your application. For help, see the description of Pointer preferences in the user's guide for your application.

Connecting to Gigabit Ethernet (GigE) Networks

You must use the correct Gigabit Ethernet network card to connect your Linux workstation to the Wire network. Otherwise, you may degrade the performance of your Wire network. For information on how to configure the GigE adapter, refer to the *Stone and Wire Filesystem and Networking Guide*. Consult the "Peripherals Connection Diagrams" on page 7 as a reference for network interface card (NIC) locations.

Do the following to maximize Wire network performance in your facility:

- Connect ports from the add-on network card to the switch used for your Wire network.
- Connect the house network to the on-board network port shown in "Peripherals Connection Diagrams" on page 7. Do not use any of the ports on the add-on network card for your house network. If the house network is not connected to the on-board network port, consult your system administrator for help reconfiguring it.
- Use high-quality Category 6 (Cat 6) network cables when connecting the Linux workstation to your Wire network switch.

Connecting Storage

You can connect your Linux workstation to two types of storage:

- One or more Stone Direct disk arrays that provide storage to individual workstations. Refer to the *Stone Direct 2007 Configuration Guide* for information on connecting disk arrays to your workstation.
- A Stone Shared storage area network (SAN) that provides shared storage for multiple workstations. Refer to the *Autodesk Stone Shared Installation and Configuration Guide* for information on connecting your workstation to a SAN. This storage option is not available for the 6221 platform.

WARNING: Consult the Autodesk Web site at *www.autodesk.com/discreet-documentation* for the latest version of these guides.The 64-bit Linux operating system has a file system limit of 4 terabytes for SD and 8 terabytes for HD. The 32-bit Linux operating system has a file system limit of 4 terabytes for either SD or HD. When configuring your storage, ensure each partition does not exceed this limit, and that inodes are correctly configured. Refer to the *Stone and Wire Filesystem and Networking Guide*.

Connecting Storage to the QLA Fibre Channel Adapter

If your system is configured with the QLA 2342 fibre channel adapter, connect the storage to ports 1 and 2. Archiving devices are not supported with the QLA 2342 fibre channel adapter.

If your system is configured with the QLA 2344 fibre channel adapter, connect the storage to ports 2 and 3 (the two innermost ports). Connect archiving devices or Stone Shared to ports 1 and 4 (the two outermost ports).

Setting the QLogic QLA Fibre-Channel Adapter BIOS

Use the following settings to correctly configure the QLogic™ QLA Fibre-Channel Adapter HBA and Advanced Adapter. Either a QLA 2342 or QLA 2344 Fibre-Channel Adapter can be used. Set the HBA settings to the following values.

HBA Settings	Value
Host Adapter BIOS	Disabled
Frame Size	2048
Loop Reset Delay	5
Adapter Hard Loop ID	Disabled
Hard Loop ID	No Effect
Spinup Delay	Disabled
Connection Options	2 for Direct Connect
Fibre Channel Tape Support	Disabled
Data Rate	1- for all ports of the QLA 2342 Adapter
Data Rate	1- for ports 2 & 3 of the QLA 2344 Adapter
Data Rate	2- for ports 1 & 4 of the QLA 2344 Adapter

Set the Advanced Adapter Settings to the following values.

Hardware RAID Configuration

If you are using IR-series hardware RAID disk arrays, you must configure the Discreet® Storage Manager (DSM) on the Linux workstation. For instructions, refer to the "Installing the DSM on Linux" section of the *Discreet Storage Manager Release Notes, 2nd edition*. Consult the storage area of the Autodesk Web site at *www.autodesk.com/discreet-documentation* for the latest version of this guide.

If you are using XR-series hardware RAID disk arrays, it is not necessary to install the Autodesk Stone Storage Manager on the Linux workstation.

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Video Hardware Components

You use the video hardware components described in this section to create video I/O and graphics-to-video paths. Video I/O enables the input and output of video using a VTR or live feed. The DVS video board is the hardware component used for the video I/O path, audio, and VTR control. Graphics-to-video enables output from the graphics display to be converted to a video signal for display on a broadcast monitor. You create a graphics-to-video path to preview clips as they appear when broadcast. The NVIDIA graphics board and optional DVI-Ramp are the hardware components used for this path.

The only video hardware you must provide are a sync generator, a VTR, and an SD or HD SDI broadcast monitor. The following components are included in your hardware shipment.

DVS Centaurus board and Breakout Box II DVS *or* SDStation board and SDStation Pro breakout box — The DVS Breakout Box II connects to the Centaurus board on an IBM 6224 workstation and handles NTSC, PAL, and HD resolutions at a depth of 8 bits. The DVS SDStationPro breakout box connects to the SDStationBoard on an IBM® 6221 workstation and handles NTSC and PAL resolutions at a depth of 8 bits.

NVIDIA NV35 Quadro FX 3000G graphics board — The NVIDIA Quadro® FX 3000G is the graphics board used on both IBM 6221 and 6224 workstations. The frame lock and genlock features of this board allow video output from the NVIDIA Quadro FX 3000G board to be synchronized with external devices.

Sony PremierPro model SDM-P234/B 23-inch widescreen LCD graphics monitor — The Sony™ PremierPro™ LCD monitor features a widescreen 16:9 aspect ratio for HD projects. With this monitor, the software runs at a maximum resolution of 1920x1154. The Sony PremierPro monitor is shipped with IBM 6224 workstations.

IBM ThinkVision C220p model 673560N 22-inch CRT graphics monitor — The IBM 673560N CRT monitor features a full flat display with a 4:3 aspect ratio. With this monitor, the software runs at a maximum resolution of 1280x1024. The IBM ThinkVision™ is shipped only with IBM 6221 workstations.

Miranda DVI-Ramp external device (optional) — The DVI-Ramp connects the Linux workstation to two display devices: a high-resolution computer monitor and a professional digital video monitor. This allows the software user interface to be displayed on a standard, non-interlaced, high-resolution computer monitor, while the portion of the user interface containing video content (video window) is extracted and output on a broadcast video monitor. The DVI-Ramp outputs a standard definition serial digital video signal (SMPTE-259M-C) or a high definition serial digital video signal (SMPTE-292M).

Altinex DA1804NT distribution amplifier — The Altinex® distribution amplifier connects up to four video hardware devices to a single sync source/generator. This device is used to allow separate devices such as the NVIDIA graphics board, the DVS video board, and the Miranda DVI-Ramp to synchronize to the same sync source. This device is included only with an IBM 6224 with DVI-Ramp; it is not part of an IBM 6221 configuration.

Connecting the Sony Graphics Monitor

Connect the graphics monitor to the Miranda DVI-Ramp. If your hardware configuration does not include the Miranda DVI-Ramp, connect the graphics monitor to the NVIDIA® graphics card of the Linux workstation. Refer to the diagrams in "IBM 6224 Video Wiring" on page 17 and "IBM 6221 Video Wiring" on page 15 to see how to connect the graphics monitor.

Setting the Sony PremierPro LCD Monitor

Use the following procedures to correctly configure the Sony PremierPro widescreen 23-inch LCD Monitor.

To set up Zoom Factor:

1. Press the Power button on the monitor.
2. Press the Menu button.
3. Use the Up and Down arrow buttons to go to the Zoom option.

4. Select REAL.
5. Press OK.
6. Press Menu.

To set the Auto Adjust Factor:

1. Press the Power button on the monitor.
2. Press the Menu button.
3. Use the Up and Down arrow buttons to go to Screen A.
4. Press OK.
5. Select Auto.

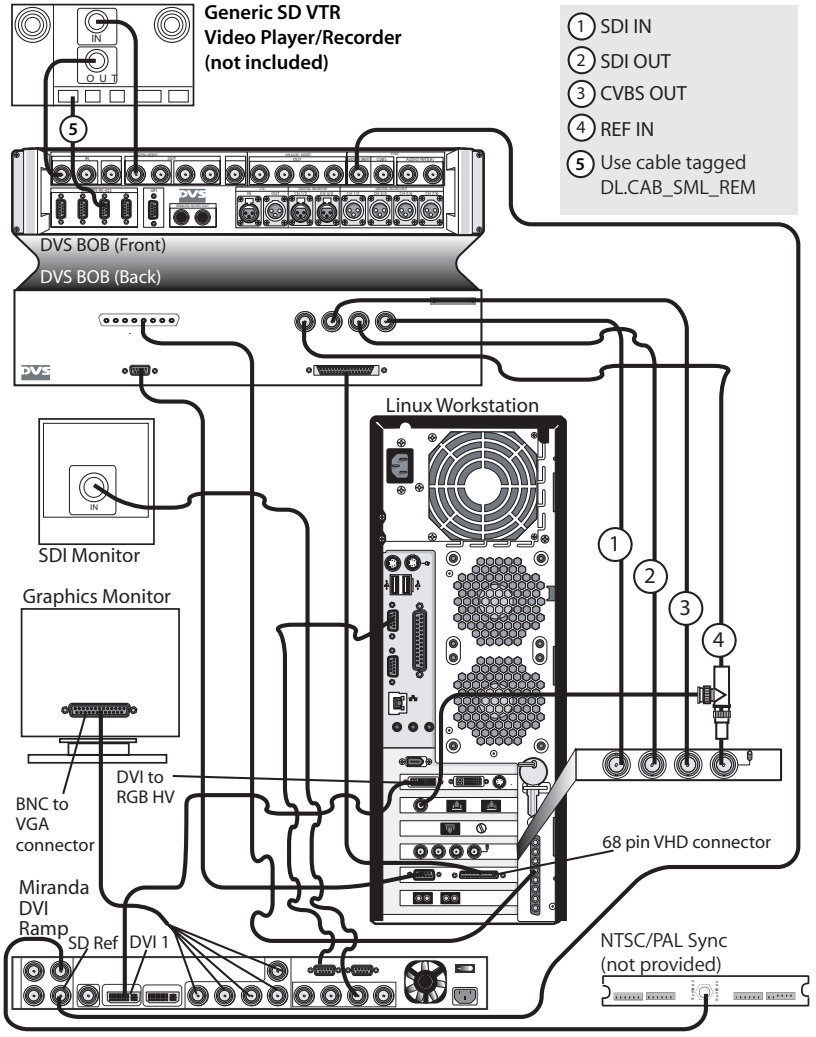
IBM 6221 Video Wiring

Use the diagrams in this section to wire the IBM 6221 workstation for SD video I/O. If your configuration includes a DVI-Ramp, refer to "Wiring for Configurations with a DVI-Ramp" on page 15. If it does not include a DVI-Ramp, refer to "Wiring for Configurations without a DVI-Ramp)" on page 16.

Wiring for Configurations with a DVI-Ramp

This configuration enables SD video I/O and preview. In this configuration, you connect the workstation to preview SD video material from the NVIDIA graphics board on an SDI broadcast monitor via the Miranda DVI-Ramp. The Miranda DVI-Ramp provides a real-time preview to both the graphics display and broadcast monitor.

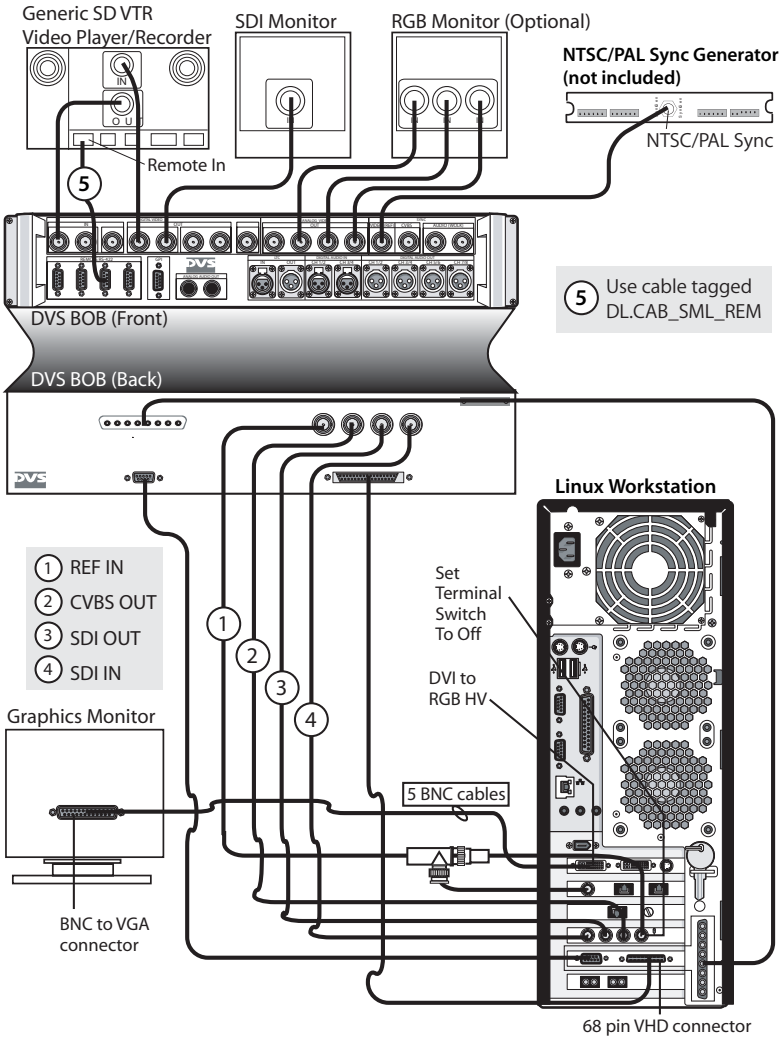
This configuration uses the following video hardware components: an IBM 6221 workstation equipped with the DVS SDStation board and NVIDIA graphics board, a Miranda DVI-Ramp, an IBM C220p CRT graphics display, and an SDI broadcast monitor.



Wiring for Configurations without a DVI-Ramp)

This configuration enables SD video I/O and preview. In this configuration, you connect the workstation to preview SD video material from the NVIDIA graphics board on an SDI broadcast monitor. The NVIDIA board sends the video signal to the graphics display and the DVS SDStation board sends the video signal to the broadcast monitor. This configuration results in a preview lag between the graphics display and broadcast monitor.

This configuration uses the following video hardware components: an IBM 6221 workstation equipped with the DVS SDStation board and NVIDIA graphics board, an IBM C220p CRT graphics display, and an SDI broadcast monitor.



IBM 6224 Video Wiring

Use the diagrams in this section to wire the IBM 6224 workstation for video I/O. If your configuration includes a DVI-Ramp, refer to "Wiring for Configurations with a DVI-Ramp" on

page 18. If it does not include a DVI-Ramp, refer to "Wiring for Configurations without a DVI-Ramp" on page 20.

Wiring for Configurations with a DVI-Ramp

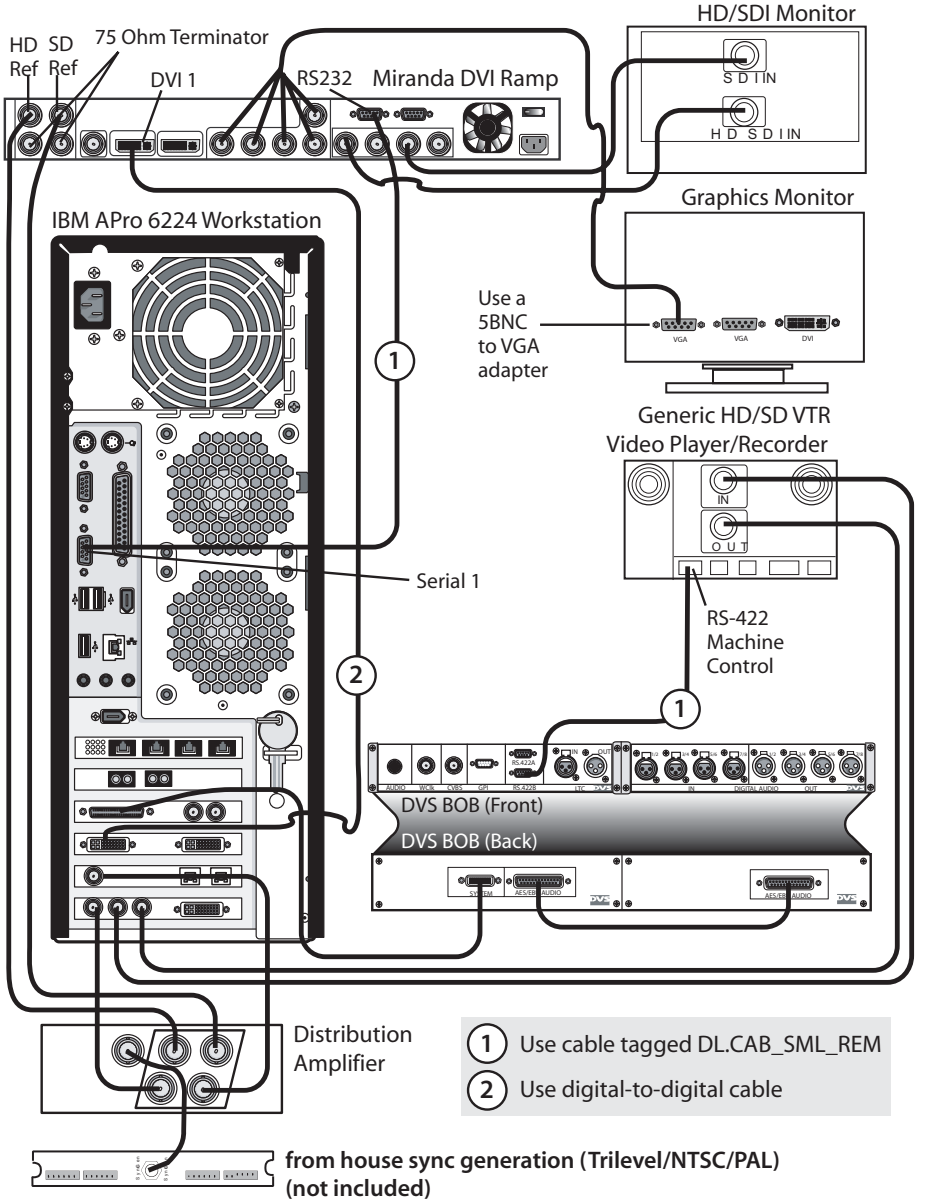
This configuration enables SD or HD I/O and preview. In this configuration, you connect the workstation to preview SD or HD video material from the NVIDIA graphics board on a broadcast monitor via the Miranda DVI-Ramp. The Miranda DVI-Ramp provides a real-time preview to both the graphics display and broadcast monitor.

This configuration uses the following video hardware components: an IBM 6224 workstation equipped with the DVS Centaurus board and NVIDIA graphics board, a Miranda DVI-Ramp, a Sony PremierPro 23-inch LCD graphics display, an HD/SDI broadcast monitor, and an Altinex distribution amplifier.

Note the following about this wiring diagram:

- The sync source is connected to the Altinex distribution amplifier. The sync source should never be connected directly to the Linux workstation.
- The VTR is connected to the SDI In A and SDI Out A ports on the Linux workstation. The SDI In B and SDI Out B ports are not used for VTR capture or playback.
- VTR control is provided through the RS-422 B port on the main DVS Breakout Box II. The RS-422 A port on the breakout box is not used.

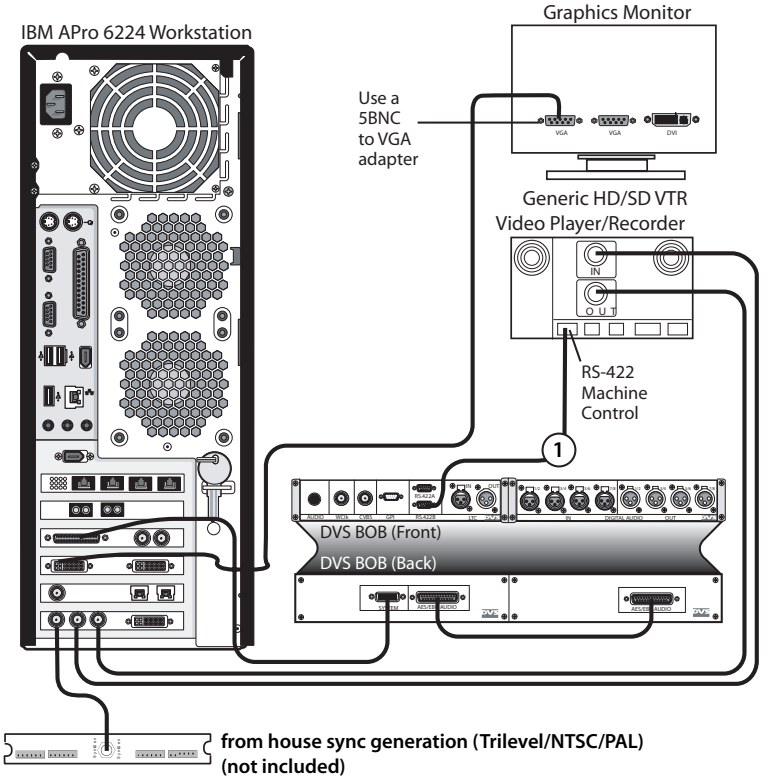
NOTE: Do not use an NTSC or PAL sync generator for HD projects; use a tri-level sync generator for HD projects instead. Using the wrong sync generator for a project may impact the stability of your workstation.



Wiring for Configurations without a DVI-Ramp

This configuration enables SD or HD I/O on a VTR. It uses the following video hardware components: an IBM 6224 workstation equipped with the DVS Centaurus board and NVIDIA graphics board, a Sony PremierPro 23-inch LCD graphics display, an HD/SDI broadcast monitor, and the Altinex distribution amplifier.

NOTE: Do not use an NTSC or PAL sync generator for HD projects; use a tri-level sync generator for HD projects instead. Using the wrong sync generator for a project may impact the stability of your workstation.



1 Use cable tagged DL.CAB_SML_REM

Setting Up VTR Emulation (Smoke Only)

You can configure Autodesk Smoke® to emulate a VTR for both input and output in real time. You control the emulator from the application or device that sees Smoke as a VTR.

The following procedure describes how to configure the hardware for VTR emulation. Consult the "VTR Emulation" chapter in the *Autodesk Smoke 2007 User's Guide* for more information on VTR emulation.

NOTE: VTR emulation is not supported on the IBM 6221 platform.

To configure hardware for VTR emulation:

1. Connect the video I/O cables between the devices involved in the VTR emulation process (out-to-in/in-to-out). Make sure the connections support the video standard you want to work with.

   If you intend to use the emulator as a Player, it is recommended that you connect one black or colour bar SDI signal to the input of the system serving as the VTR emulator. This ensures the Player is stable and correctly sync'ed.

   NOTE: VTR emulation requires a Smoke workstation with a video board. The Video keyword for the corresponding device must be uncommented in the software initialisation configuration file. For an explanation of this keyword, refer to the *Configuration File Reference Guide* for your operating system.

2. Connect the audio I/O cables between the devices involved in the VTR emulation process (out-to-in/in-to-out).

   If you intend to use the emulator as a Player, it is recommended that you connect an external AES signal such as a tone to the input of the system serving as the VTR emulator. This ensures the Player is stable and correctly sync'ed.

3. Connect an RS-422 control cable to the serial ports between the devices in the VTR emulation process. Make sure the serial ports correspond to those defined by the Emulator keywords in the software initialisation configuration file, *inti.cfg*. For an explanation of this keyword, refer to the *Configuration File Reference Guide* for your operating system.

   NOTE: The RS-422 cables for VTR emulation require custom pinouts. See "VTR Emulation RS-422 Control Cables" on page 21.

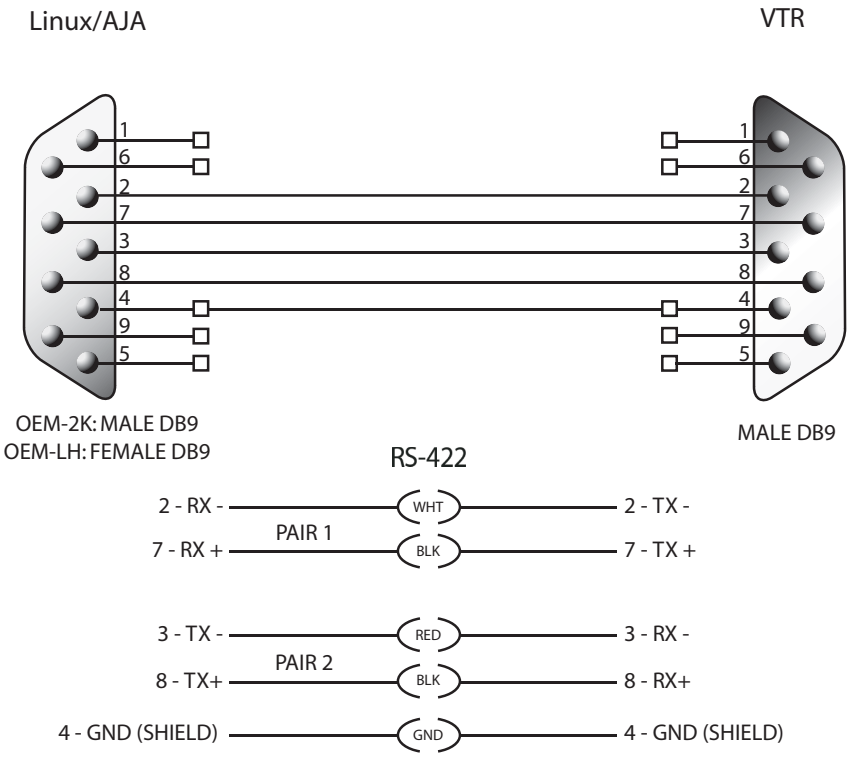
4. Make sure the appropriate video and audio sync setup is in place.

VTR Emulation RS-422 Control Cables

Custom cables are required to control the VTR emulator. The pinouts required by the cable depend on the workstation and device involved in the VTR emulation process. The following

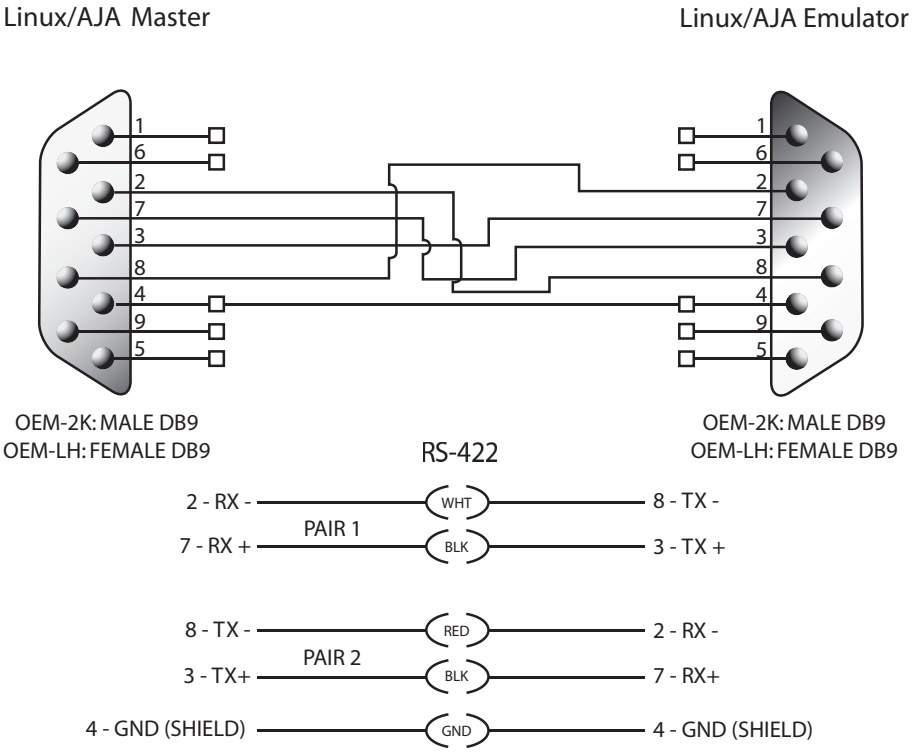
diagrams depict the control cable pinouts for the standard VTR control cables (for reference purposes) followed by those required for the most common VTR emulation setups.

Standard VTR Control Cable:
Linux/AJA Controlling VTR (Normal Video I/O Control Cable)



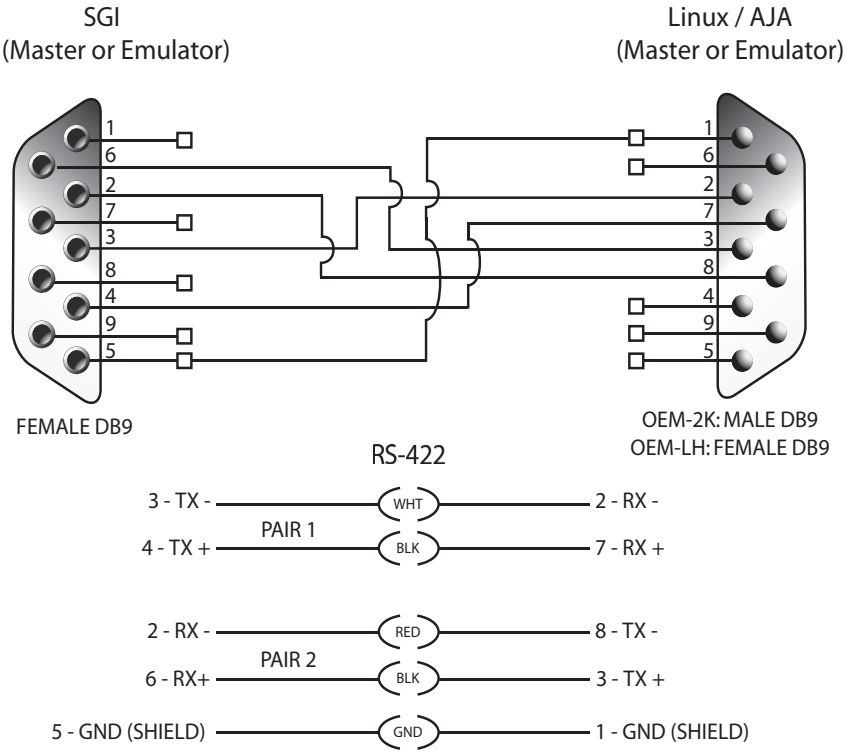
VTR-Emulation Control Cable:

Linux/AJA Master Controlling Linux/AJA Emulator



VTR-Emulation Control Cable:

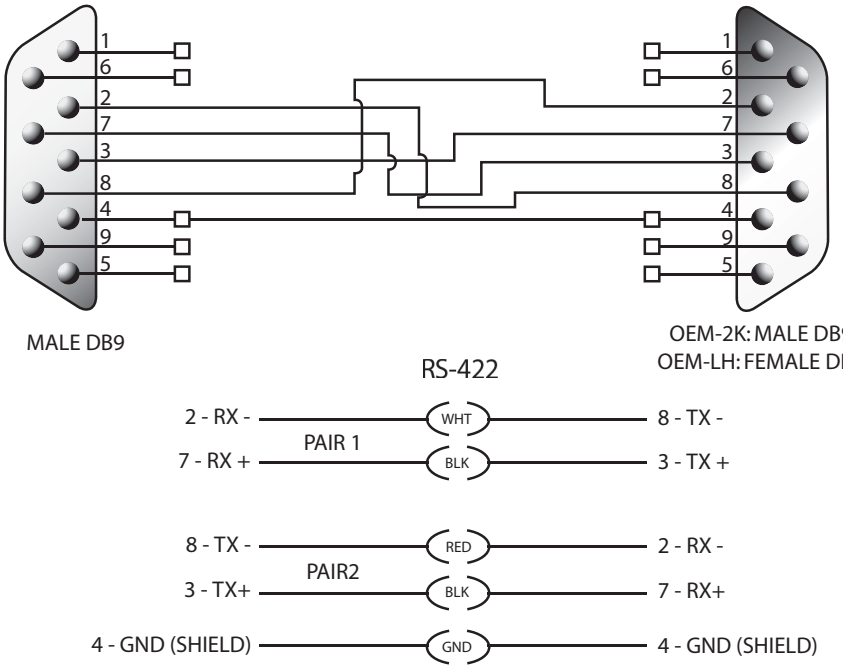
SGI Master Controlling Linux/AJA Enulator
Linux/AJA Master Controlling SGI Emulator



VTR-Emulation Control Cable:
3rd-Party Device Master Controlling Linux/AJA Emulator

3rd-Party Device Master

Linux/AJA Emulator



4 Setting Up Audio Hardware

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About Discreet Native Audio

Discreet Native Audio is an audio subsystem integrated with the application. On Linux platforms, Discreet Native Audio is based on the following configurations.

Workstation	Configuration
IBM 6221	DVS SDStationPro breakout box and the DVS SDStation board
IBM 6224	Balanced Audio breakout box component of the DVS Breakout Box II and the DVS Centaurus board.

Through the external Lucid ADAT converter (ADA 8824) that shipped with your system, Discreet Native Audio offers the following features. All channels use 24-bit audio resolution.

Application	Features
Flint	2 audio tracks in playback 2 audio input channels 2 audio output channels
Smoke	32 audio tracks maximum 4 audio input channels (DVS SDStation board) 8 audio input channels (DVS Centaurus board) 8 audio output channels

Additionally, you can store the audio captured from a VTR or from an imported file at 32 bits on the framestore. Discreet Native Audio also supports 32-bit audio playback.

Configure audio hardware only after having configured all Linux workstations and video hardware components.

Understanding Remote vs Local Control of the Converter

You can control the converter either remotely or locally. Remote control of the converter means that you physically connect the workstation directly to the converter and adjust converter settings through the audio preferences of the application. Local control means you adjust converter settings manually, using the DIP switches on the back of the converter.

All diagrams in this chapter indicate the connection you must cable to enable remote control of the converter.

Audio Hardware Components

The Discreet Native Audio hardware components are described as follows.

Lucid 8824 ADAT converter — Converts signals between the Linux workstation and all digital or analog audio I/O devices.

DVS SDStationPro breakout box and SDStationBoard — The DVS SDStationPro breakout box connects to the SDStation board on an IBM 6221 workstation. The SDStation board is a half-length PCI-bus single board that provides real-time input and output of uncompressed SD video signals as well as audio data at 24-bit resolution.

The SDStation board handles balanced AES/EBU audio signals from the SDStationPro breakout box. For Autodesk Flint®, it handles two input and two output audio channels. For Smoke, it handles four input and eight output audio channels.

DVS Balanced Audio breakout box and Centaurus board — The Balanced Audio breakout box is the audio component of the DVS Breakout Box II. It provides connections for audio I/O. This breakout box connects to the DVS Centaurus board on an IBM 6224 workstation. The Centaurus board provides real-time input and output of uncompressed SD and HD video signals as well as audio data at 24-bit resolution.

The Centaurus board handles balanced AES/EBU audio signals from the Balanced Audio breakout box. For Flint, it handles two input and two output audio channels. For Smoke, it handles eight input and eight output audio channels.

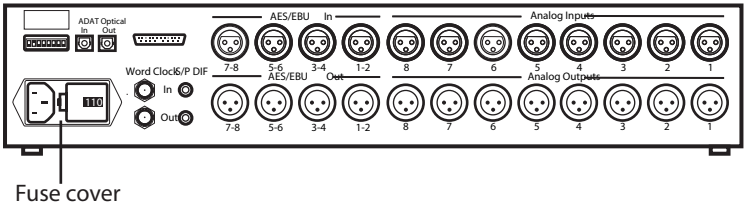
Setting the Voltage of the ADAT Converter

Make sure the ADAT converter is set to work with your site's voltage (110 or 220 volts). To change the voltage of the ADAT converter, you must first remove the fuse cover on the back of the adapter. A voltage key is located behind the fuse cover. The current voltage setting is visible through a small window in the cover.

To change the voltage:

1. Make sure the ADAT converter is unplugged.
2. Remove the fuse cover on the back of the adapter.

ADAT Converter—Rear View



3. Remove the red voltage key from the adapter. The voltage key has two voltage settings on its top side and it contains two fuses.
4. Insert fuses for the intended voltage according to the following table.

For:	Insert:
110 volts AC	1/2 Amp, 250 VAC slow blowing fuses (Bussman type GDC-500 MA)
220 volts AC	1/4 Amp, 250 VAC slow blowing fuses (Bussman type GDC-250 MA)

5. Turn the voltage key until the correct voltage setting appears on the right side.
6. With the correct voltage setting facing you and on the right, slide the voltage key back into the converter.

   The fuse clicks when it is properly seated.
7. Replace the fuse cover.

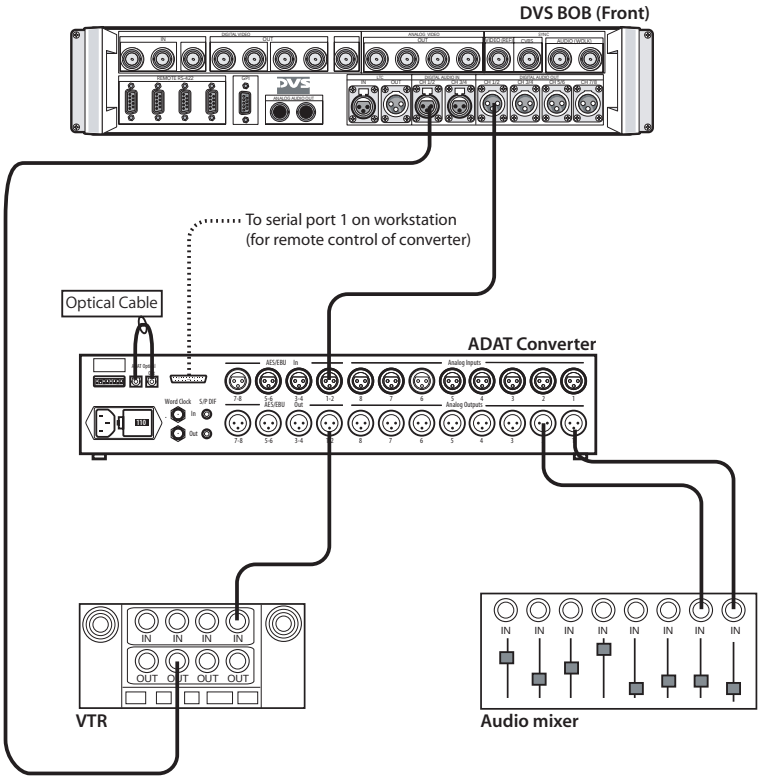
IBM 6221 Audio Wiring

Setting up Discreet Native Audio on an IBM 6221 workstation involves connecting the hardware components (such as the ADAT converter) to the DVS SDStationPro video breakout box, and then connecting the video breakout box to ports on the Linux workstation. Refer to the following to set up your audio hardware:

- To configure the Lucid ADAT converter for use with the Linux workstation, refer to "Recommended DIP Switch Settings" on page 33.
- To connect the SDStationPro breakout box to the 6221 workstation, refer to "IBM 6221 Video Wiring" on page 15.
- To connect the Discreet Native Audio hardware components to the breakout box, refer to "Flint Audio Wiring Diagram" on page 30 or "Smoke Audio Wiring Diagram" on page 31.

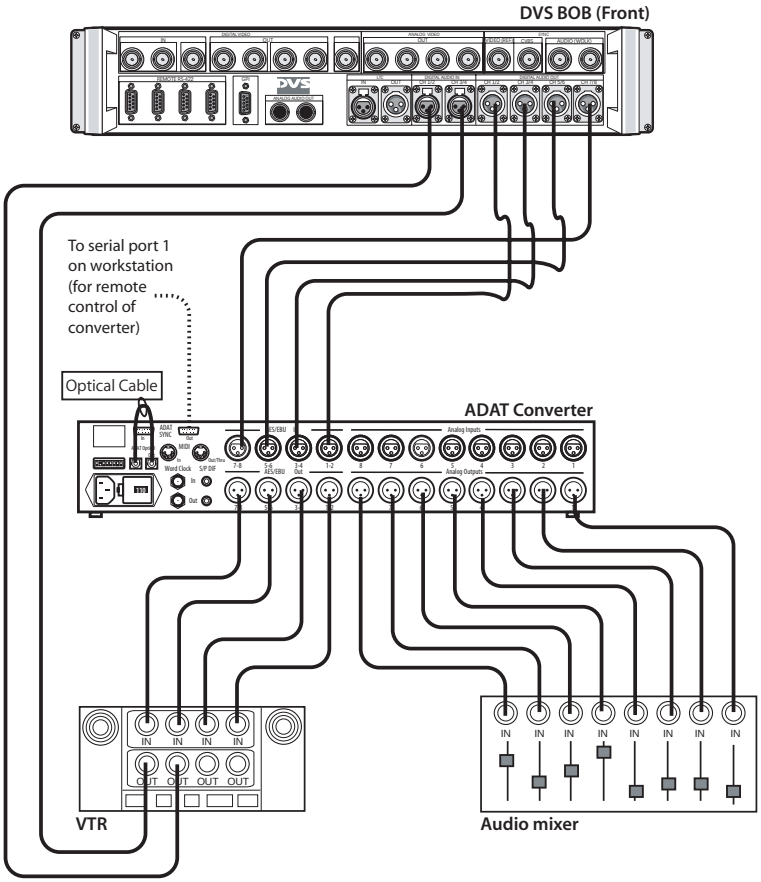
Flint Audio Wiring Diagram

Use this diagram to wire audio hardware components for Flint on the IBM 6221 workstation.



Smoke Audio Wiring Diagram

Use this diagram to wire audio hardware components for Smoke on the IBM 6221 workstation.



IBM 6224 Audio Wiring

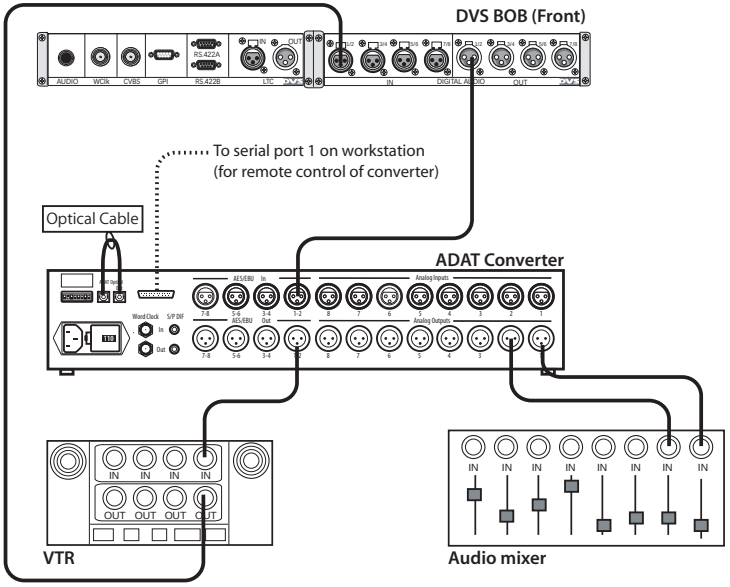
Setting up Discreet Native Audio on an IBM 6224 workstation involves connecting hardware components (such as the ADAT converter) to the Balanced Audio breakout box component of the DVS Breakout Box II, and then connecting the DVS Breakout Box II to the Centaurus board on the Linux workstation. Refer to the following to set up your audio hardware:

- To configure the Lucid ADAT converter for use with the Linux workstation, refer to "Recommended DIP Switch Settings" on page 33.

- To connect the DVS Breakout Box II to the 6224 workstation, refer to "IBM 6224 Video Wiring" on page 17.
- To connect the Discreet Native Audio hardware components to the breakout box, refer to "Flint Audio Wiring Diagram" on page 32 or "Smoke Audio Wiring Diagram" on page 33.

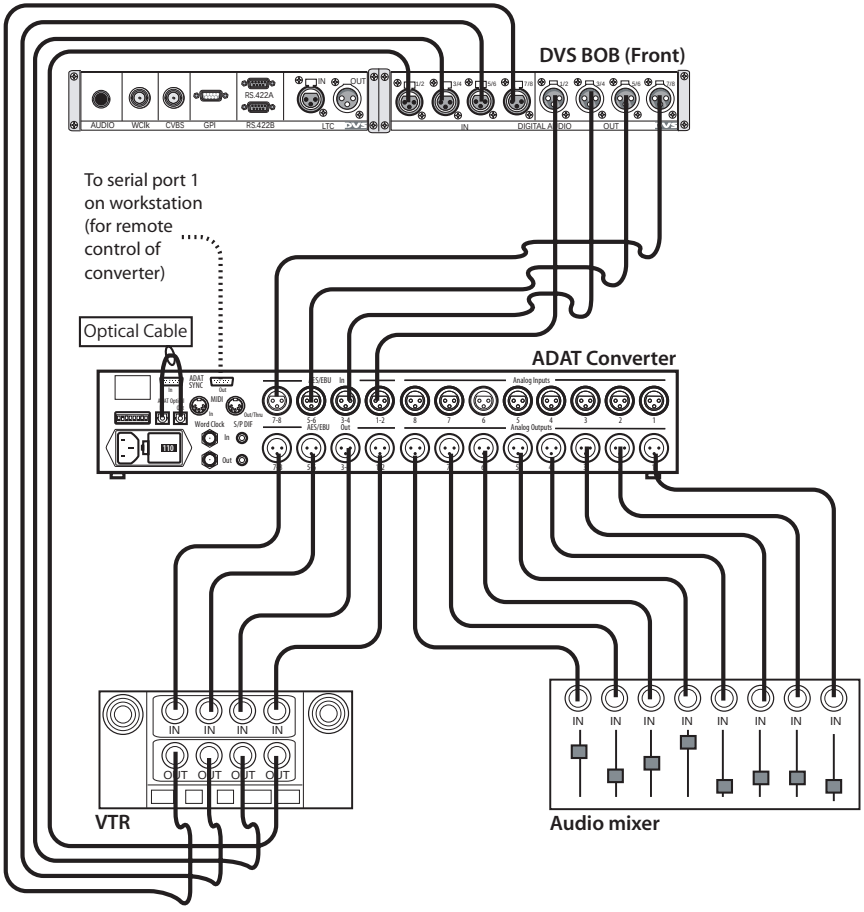
Flint Audio Wiring Diagram

Use this diagram to wire audio hardware components for Flint on the IBM 6224 workstation.



Smoke Audio Wiring Diagram

Use this diagram to wire audio hardware components for Smoke on the IBM 6221 workstation.



Recommended DIP Switch Settings

Use the following table to set the DIP switches on the Lucid ADAT converter for use with a Linux workstation.

DIP Switch	Controls	Required Setting	Position
1	Local/Remote	Local	Up
2	Input Sync Source	AES 1-2	Down
3			Down
4			Up

DIP Switch	Controls	Required Setting	Position
5	Analog Output Source	ADAT	Down
6	AES/EBU Output Source	ADAT	Down
7	Optical Output Source	AES	Up
8	Meter Select	Output	Up
		Input	Down

NOTE: Leave DIP switch 1 set to Local, regardless of whether you are controlling the converter locally or remotely.

Updating the Software Initialisation Configuration File

To use Discreet Native Audio, the `Audiodevice` keyword must be uncommented and set to enable Discreet Native Audio in the software initialisation file (by default, *init.cfg*).

NOTE: For additional information on this keyword, refer to the *Configuration File Reference Guide* for your operating system.

To update the *init.cfg* file:

1. Log in to the application account and open a terminal.
2. Open the *init.cfg* file. Type:

   ```
   dlcfg
   ```

   The *init.cfg* file opens.
3. Search for the Audiodevice keyword.
4. Make sure the Audiodevice keyword is uncommented and set as follows:

   ```
   Audiodevice DVS
   ```
5. Save and close the *init.cfg* file.

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